

UNITED STATES PATENT APPLICATION
FOR
METHODS AND SYSTEMS FOR A CALL LOG
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DESCRIPTION

Related Applications

[001] This application is a continuation-in-part of U.S. Patent Application No. 10/083,793, entitled "METHOD AND APPARATUS FOR CALENDARED COMMUNICATIONS FLOW CONTROL," filed February 27, 2002, Attorney Docket No. 01-1007; U.S. Patent Application No. 10/083,792, entitled "VOICE MAIL INTEGRATION WITH INSTANT MESSENGER," filed February 27, 2002, Attorney Docket No. 01-1001; U.S. Patent Application No. 10/083,884, entitled "DEVICE INDEPENDENT CALLER ID," filed February 27, 2002, Attorney Docket No. 01-1002; and U.S. Patent Application No. 10/083,822, entitled "METHOD AND APPARATUS FOR A UNIFIED COMMUNICATION MANAGEMENT VIA INSTANT MESSAGING," filed February 27, 2002, Attorney Docket No. 01-1004, all of which claim priority to U.S. Provisional Patent Application Nos. 60/272,122, 60/272,167, 60/275,667, 60/275,719, 60/275,020, 60/275,031, and 60/276,505, and all of which are expressly incorporated herein by reference in their entirety.

[002] Applicants claim the right to priority under 35 U.S.C. § 119(e) based on Provisional Patent Application No. 60/428,704, entitled "DIGITAL COMPANION," filed November 25, 2002; and Provisional Patent Application No. 60/436,018, entitled "DIGITAL COMPANION," filed December 26, 2002, both of which are expressly incorporated herein by reference in their entirety.

[003] The present application also relates to U.S. Patent Application No. 10/084,121, entitled "CALENDAR-BASED CALLING AGENTS," filed February 27, 2002, Attorney Docket No. 01-1008; U.S. Patent Application No. (_____),

entitled "METHODS AND SYSTEMS FOR DRAG AND DROP CONFERENCE CALLING," Attorney Docket No. 03-1012; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR CONFERENCE CALL BUFFERING," Attorney Docket No. 03-1013; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR COMPUTER ENHANCED CONFERENCE CALLING," Attorney Docket No. 03-1014; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR REMOTE CALL ESTABLISHMENT," Attorney Docket No. 03-1015; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR CALL MANAGEMENT WITH USER INTERVENTION," Attorney Docket No. 03-1016; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR DIRECTORY INFORMATION LOOKUP," Attorney Docket No. 03-1017; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR AUTOMATICALLY FORWARDING CALLS TO CELL PHONE," Attorney Docket No. 03-1018; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR ADAPTIVE MESSAGE AND CALL NOTIFICATION," Attorney Docket No. 03-1019; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR AUTOMATIC FORWARDING OF CALLS TO A PREFERRED DEVICE," Attorney Docket No. 03-1021; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR MULTI-LINE INTEGRATED DEVICE OR LINE MANAGEMENT," Attorney Docket No. 03-1022; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR CONTACT MANAGEMENT," Attorney Docket No. 03-1023; U.S. Patent Application No.

(_____), entitled "METHODS AND SYSTEMS FOR NOTIFICATION OF CALL TO PHONE DEVICE," Attorney Docket No. 03-1024; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR SINGLE NUMBER TEXT MESSAGING," Attorney Docket No. 03-1025; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR MULTI-USER SELECTIVE NOTIFICATION," Attorney Docket No. 03-1026; U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR CPN TRIGGERED COLLABORATION," Attorney Docket No. 03-1027; and U.S. Patent Application No. (_____), entitled "METHODS AND SYSTEMS FOR PREEMPTIVE REJECTION OF CALLS," Attorney Docket No. 03-1028, all of which are expressly incorporated herein by reference in their entirety.

Technical Field

[004] The present invention generally relates to communication systems and, more specifically, to methods and systems for logging and managing outgoing call information.

Background

[006] A wide variety of means exist for communication between users. For example, a user may conduct phone calls via a home phone, work phone, and mobile phone. In addition, users may also communicate using devices such as PC's, PDA's, pagers, etc. using, for example, email and instant messaging.

[007] Unfortunately, managing such a wide variety of communication means can be difficult. In particular, as a user changes location, communication with the user may vary. For example, while on travel, it may only be possible to reach a user

by mobile phone. However, the user may best be reached by email while at work. Also, the user may wish to implement various rules for receiving and controlling communications. For example, to be reached at home, the user may want the home phone to ring three times before forwarding the call to a mobile phone. As another example, the user may wish to be paged each time an email is received from a particular person while away from the office.

[008] Typically, to implement communication management, a person must individually manage each communication device separately. Thus, when the user wishes to change how communication is managed, the user may have to deal with numerous devices and, perhaps, service centers.

[009] Further, call management is becoming increasingly difficult given the variety of communication devices and services. Especially with outgoing calls, conventional communication system provide users with limited features. One feature often provided by conventional systems is "redial," which enables a user to initiate a call to a previously dialed number without re-inputting that number. Certain systems (e.g., digital cell phones) allow users to locally store phone numbers in a contact list, which is usually a FIFO or rolling list with limited storage capacity. In such systems, the user typically must perform an action to insert phone numbers in the contact list. For example, in a cell phone, the user must enter in phone numbers via a keypad and instruct the device to save the entered numbers. Certain systems may automatically store all outgoing and incoming calls in a rolling list as they are dialed and received; however, such systems typically provide limited FIFO storage and usually store only the numbers. Current communication systems do not provide

users with filtering and exclusion options for outgoing call storage, and these systems do not allow users to obtain caller information from the dialed numbers. Moreover, conventional systems do not facilitate coordination and management of outgoing calls originating from several devices (e.g., cell phones, laptops, PDAs, J2ME phones, BREW phones, etc.).

[010] Methods, systems, and articles of manufacture consistent with certain embodiments of the present invention are directed to obviating one or more of the issues set forth above.

SUMMARY

[011] Systems and methods consistent with the present invention may log information associated with outgoing calls in a call log. In one embodiment of the present invention, systems and methods may be provided for receiving instructions from a user that specify filtering preferences for logging outgoing calls. For example, a user may specify a list of telephone numbers that, when dialed, should be excluded from or included in the call log. In one embodiment, the user may specify filter settings via a user terminal coupled to a server. Methods and systems consistent with the present invention may obtain outgoing call information associated with a call originating from a calling device and destined to a called device. For example, a programmable wireless telephone may be configured to capture outgoing call information (e.g., a dialed telephone number). In another example, outgoing call information may be obtained via a service control point associated with a landline telephone. Consistent with principles of the present invention, outgoing call information may be transmitted to a server residing in a service center. Systems

and methods consistent with the present invention may determine whether or not to log the outgoing call information based on the filter settings (e.g., the server may consult the exclusion list). If an outgoing call passes through filtering, the outgoing call information may be stored in a call log, which may, in certain implementations, reside in a database in the service center. Systems and methods consistent with the present invention may provide the user with access to the call log (e.g., via the user terminal).

[012] In certain embodiments consistent with the present invention, systems and methods may use the call log to add contacts to a contact list. Consistent with principles of the present invention, contact-related information associated with a called party may be retrieved using the call log. For example, a server in the service center may retrieve contact-related information using the dialed number. The retrieved contact information may then be added to the contact list.

[013] In certain embodiments consistent with the present invention, systems and methods may perform data analyses using the call log. For example, calling patterns and/or frequencies may be processed via information in the call log and presented to the user.

[014] In certain embodiments consistent with the present invention, systems and methods may log and manage calls associated with a plurality of devices. Methods and systems may obtain information associated with outgoing calls originating from each of a plurality of source communication devices and destined to one or more destination devices. For example, information associated with outbound calls originating from a user's cell phone, landline phone, and PDA may be

obtained. Methods and systems consistent with the present invention may store the outgoing call information associated with each of a user's devices in a call log. In certain embodiments, users may set filtering settings for each device, and outgoing calls from each device may be stored in the call log based on the filtering settings. The call log may be accessible by the user terminal and/or one or more of the devices.

[015] Both the foregoing and the following descriptions are exemplary and explanatory only and are not intended to limit the claimed invention in any manner whatsoever.

BRIEF DESCRIPTION OF THE DRAWINGS

[016] The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate exemplary embodiments of the invention and, together with the description, serve to explain principles of the invention. In the drawings:

[017] Fig. 1 is a diagram of an exemplary data processing and telecommunications environment in which features and aspects consistent with the principals of the present invention may be implemented;

[018] Fig. 2 is a diagram of an exemplary user terminal, consistent with the principals of the present invention;

[019] Fig. 3 is a diagram of a voice network, consistent with the principles of the present invention;

[020] Fig. 4 is a block diagram of a service center, consistent with the principles of the present invention;

[021] Fig. 5 illustrates a logical architecture of an exemplary system, consistent with the present invention;

[022] Fig. 6 is a diagram graphically illustrating methods consistent with certain embodiments of the present invention; and

[023] Fig. 7 is a flowchart depicting stages of a method consistent with certain embodiments of the present invention.

DETAILED DESCRIPTION

[024] Reference will now be made in detail to exemplary embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the figures to refer to the same or like elements. The accompanying figures illustrate exemplary embodiments and implementations consistent with the present invention, but the description of those embodiments does not indicate or imply that other embodiments or implementations do not fall within the scope of present invention. It is to be understood that other implementations may be utilized and that structural and method changes may be made without departing from the scope of present invention.

[025] Fig. 1 is a block diagram of a data processing and telecommunications environment 100, in which features and aspects consistent with the present invention may be implemented. The number of components in environment 100 is not limited to what is shown and other variations in the number of arrangements of components are possible, consistent with embodiments of the invention. The components of Fig. 1 may be implemented through hardware, software, and/or

firmware. Data processing and telecommunications environment 100 may include a data network 102, a voice network 104, and a service center 106. A user 110 may use a user terminal 112 to interface with data network 102 and may use phones 114, 116, and 118 to interface with voice network 104. Calling party 120 may use phone 122 to call a user, such as user 110, at any one of phones 114, 116, and 118.

[026] Data network 102 provides communications between the various entities depicted in environment 100 of Fig. 1, such as user terminal 112 and service center 106. Data network 102 may be a shared, public, or private network and encompass a wide area or local area. Data network 102 may be implemented through any suitable combination of wired and/or wireless communication networks. By way of example, data network 102 may be implemented through a wide area network (WAN), local area network (LAN), an intranet and/or the Internet. Further, the service center 106 may be connected to multiple data networks 102, such as, for example, to a wireless carrier network and to the Internet.

[027] Voice network 104 may provide telephony services to allow a calling party, such as calling party 120, to place a telephone call to user 110. In one embodiment, voice network 104 may be implemented using a network, such as the Public Switched Telephone Network ("PSTN"). Alternatively, voice network 104 may be implemented using voice-over Internet Protocol ("VoIP") technology. In addition, voice network 104 may be implemented using both PSTN and VoIP technology consistent with the principles of the present invention. Further, service center 106 may be connected to multiple voice networks 104, such as for example, Verizon's™

Voice Network, voice networks operated by other carriers, and wireless carrier networks.

[028] Service center 106 provides a platform for managing communications over data network 102 and voice network 104. Service center 106 also provides gateway functions, such as code and protocol conversions, to transfer communications between data network 102 and voice network 104. Service center 106 may be implemented using a combination of hardware, software, and/or firmware. For example, service center 106 may be implemented using a plurality of general purpose computers or servers coupled by a network (not shown). Although service center 106 is shown with direct connections to data network 102 and voice network 104, any number and type of network elements may be interposed between service center 106, data network 102, and voice network 104.

[029] User terminal 112 provides user 110 an interface to data network 102. For example, user terminal 112 may be implemented using any device capable of accessing the Internet, such as a general purpose computer or personal computer equipped with a modem. User terminal 112 may also be implemented in other devices, such as the Blackberry™, and Ergo Audrey™. Furthermore, user terminal 112 may be implemented in wireless devices, such as pagers, mobile phones (with data access functions), and Personal Digital Assistants ("PDA") with network connections.

[030] User terminal 112 also allows user 110 to communicate with service center 106. For example, user 110 may use instant messaging ("IM") to communicate with service center 106. In addition, user terminal 112 may use other

aspects of TCP/IP including the hypertext transfer protocol ("HTTP"); the user datagram protocol ("UDP"); the file transfer protocol ("FTP"); the hypertext markup language ("HTML"); and the extensible markup language ("XML").

[031] Furthermore, user terminal 112 may communicate directly with service center 106. For example, a client application may be installed on user terminal 112, which directly communicates with service center 106. Also, user terminal 112 may communicate with service center 106 via a proxy.

[032] Phones 114, 116, 118, and 122 interface with voice network 104. Phones 114, 116, 118, and 122 may be implemented using known devices, including wireline phones and mobile phones. In certain embodiments of the present invention, phones 114, 116, 118, and 122 may include programmable calling devices such as BREW phones, J2ME phones, PDAs, and laptops and may be compatible with PSTN and/or VoIP technology. Although phones 114, 116, 118, and 122 are shown directly connected to voice network 104, any number of intervening elements, such as a private branch exchange ("PBX"), may be interposed between phones 114, 116, 118, and 122 and voice network 104.

[033] Fig. 2 is a block diagram of user terminal 112 consistent with the present invention. User terminal 112 includes a central processing unit (CPU) 200, a memory 202, a storage module 204, a network interface 206, an input interface 208, an output interface 210, an input device 216, and an output device 218.

[034] CPU 200 provides control and processing functions for user terminal 112. Although Fig. 2 illustrates a single CPU, user terminal 112 may include multiple CPUs. CPU 200 may also include, for example, one or more of the following: a

co-processor, memory, registers, and other processing devices and systems as appropriate. CPU 200 may be implemented, for example, using a Pentium™ processor provided from Intel Corporation.

[035] Memory 202 provides a primary memory for CPU 200, such as for program code. Memory 202 may be embodied with a variety of components of subsystems, including a random access memory ("RAM") and a read-only memory ("ROM"). When user terminal 112 executes an application installed in storage module 204, CPU 200 may download at least a portion of the program code from storage module 204 into memory 202. As CPU 200 executes the program code, CPU 200 may also retrieve additional portions of program code from storage module 204.

[036] Storage module 204 may provide mass storage for user terminal 112. Storage module 204 may be implemented with a variety of components or subsystems including, for example, a hard drive, an optical drive, CD ROM drive, DVD drive, a general-purpose storage device, a removable storage device, and/or other devices capable of storing information. Further, although storage module 204 is shown within user terminal 112, storage module 204 may be implemented external to user terminal 112.

[037] Storage module 204 includes program code and information for user terminal 112 to communicate with service center 106. Storage module 204 may include, for example, program code for a calendar application, such as GroupWise provided by Novell Corporation or Outlook provided by Microsoft Corporation; a client application, such as a Microsoft Network Messenger Service (MSNMS) client

or America Online Instant Messenger (AIM) client; and an Operating System (OS), such as the Windows Operation System provided by Microsoft Corporation. In addition, storage module 204 may include other program code and information, such as program code for TCP/IP communications; kernel and device drivers; configuration information, such as a Dynamic Host Configuration Protocol (DHCP) configuration; a web browser, such as Internet Explorer provided by Microsoft Corporation, or Netscape Communicator provided by Netscape Corporation; and any other software that may be installed on user terminal 112.

[038] Network interface 206 provides a communications interface between user terminal 112 and data network 102. Network interface 206 may receive and transmit communications for user terminal 112. For example, network interface 206 may be a modem, or a local area network ("LAN") port.

[039] Input interface 208 receives input from user 110 via input device 212 and provides the input to CPU 200. Input device 212 may include, for example, a keyboard, a microphone, and a mouse. Other types of input devices may also be implemented consistent with the principles of the present invention.

[040] Output interface 210 provides information to user 110 via output device 214. Output device 214 may include, for example, a display, a printer, and a speaker. Other types of output devices may also be implemented consistent with the principles of the present invention.

[041] Fig. 3 is a diagram of a voice network, consistent with the principles of the present invention. As shown, voice network 104 includes an intelligent service control point (ISCP) 302, service transfer points (STP) 304 and 306, service

switching points (SSP) 308 and 310, a line information database (LIDB) 312, an ISCP Service Provisioning And Creation Environment (SPACE) 314, a Recent Change Environment 316, and an Intelligent Peripheral (IP) 320.

[042] Voice network 104 may be implemented using the PSTN and SS7 as a signaling protocol. The SS7 protocol allows voice network 104 to provide features, such as call forwarding, caller-ID, three-way calling, wireless services such as roaming and mobile subscriber authentication, local number portability, and toll-free/toll services. The SS7 protocol provides various types of messages to support the features of voice network 104. For example, these SS7 messages may include Transaction Capabilities Applications Part ("TCAP") messages to support event "triggers," and queries and responses between ISCP 302 and SSPs 308 and 310.

[043] ISCP 302 may also be, for example, a standard service control point (SCP) or an Advanced Intelligent Network (AIN) SCP. ISCP 302 provides translation and routing services of SS7 messages to support the features of voice network 104, such as call forwarding. In addition, ISCP 302 may exchange information with the service center 106 using TCP/IP or SS7. ISCP 302 may be implemented using a combination of known hardware and software. Although ISCP 302 is shown with a direct connection to service center 106 through ISCP SPACE 314, any number of network elements including routers, switches, hubs, etc., may be used to connect ISCP 302 and service center 106.

[044] STPs 304 and 306 relay SS7 messages within voice network 104. For example, STP 304 may route SS7 messages between SSPs 308 and 310. STP 302

may be implemented using known hardware and software from manufacturers such as NORTEL™ and LUCENT Technologies™.

[045] SSPs 308 and 310 provide an interface between voice network 104 and phones 114 and 120, respectively, to setup, manage, and release telephone calls within voice network 104. SSPs 308 and 310 may be implemented as a voice switch, an SS7 switch, or a computer connected to a switch. SSPs 308 and 310 exchange SS7 signal units to support a telephone call between calling party 120 and user 110. For example, SSPs 308 and 310 may exchange SS7 messages, such as TCAP messages, within message signal units ("MSU") to control calls, perform database queries to configuration database 312, and provide maintenance information.

[046] Line Information Database (LIDB) 312 comprises one or more known databases to support the features of voice network 104. For example, LIDB 312 may include subscriber information, such as a service profile, name and address, and credit card validation information.

[047] ISCP Service Provisioning and Creation Environment (SPACE) 314 may be included as part of ISCP 302 or be separate from ISCP 302. For example, the Telcordia™ ISCP may include an environment similar to SPACE 314 as part of the product. Further, ISCP SPACE 314 may include one or more servers. ISCP SPACE 314 is the point in the ISCP platform where customer record updates may be made.

[048] In one embodiment, customer records may be stored in ISCP SPACE 314 such that the records may be updated and sent to ISCP 302. These records

may include information regarding how to handle calls directed to the customer. For example, these customer records may include information regarding whether or not calls for the customer are to be forwarded to a different number, and/or whether or not the call should be directed to an IP, such as a voice mail system, after a certain number of rings. Additionally, one ISCP SPACE 314 may provide updates to one or more ISCPs 302 via an ISCP network (not shown).

[049] Additionally, voice network 104 may include one or more recent change engines 316 such as, for example, an Enterprise Recent Change engine (eRC); an Assignment, Activation, and Inventory System (AAIS); or a multi-services platform (MSP). As an example, the eRC and AAIS may be used in voice networks 104 located in the western part of the United States, while an MSP may be used in networks in the eastern part. The recent change engines may be used to update switch and ISCP databases. For example, a recent change engine may deliver database updates to SSPs and to ISCPs, such that when updating databases, these recent change engines emulate human operators. Additionally, if the instructions are to be sent to an ISCP 302, the recent change engine may first send the instructions to ISCP SPACE 314, which then propagates the instructions to ISCP 302 as discussed above. Further, an MSP may be used, for example, for providing updates to both SSPs 308 or 310 and ISCPs 302. Or, for example, an eRC may be used for providing updates to SSPs 308 or 310, while an AAIS is used for providing updates to ISCPs 302.

[050] Additionally, voice network 104 may include one or more intelligent peripherals (IP). For example, in Fig. 4, an IP 320 is illustrated as being connected

to SSP 308. These IPs may be used for providing services, such as voice mail services.

[051] Fig. 4 is a block diagram of a service center, consistent with the principles of the present invention. As shown, service center 106 may include firewalls 402 and 404, one or more digital companion servers 406, one or more communication portal servers 408, one or more network access servers 410, and a voice portal 412. Voice portal 412 may include a voice portal application server 414 and a voice recognition server 416. A network 418 may be used to interconnect the firewalls and servers. Additionally, back end server(s) 420 may be provided between service center 106 and voice network 104.

[052] Firewalls 402 and 404 provide security services for communications between service center 106, data network 102, and voice network 104, respectively. For example, firewalls 402 and 404 may restrict communications between user terminal 112 and one or more servers within service center 106. Any security policy may be implemented in firewalls 402 and 404 consistent with the principles of the present invention. Firewalls 402 and 404 may be implemented using a combination of known hardware and software, such as the Raptor Firewall provided by the Axent Corporation. Further, firewalls 402 and 404 may be implemented as separate machines within service center 106, or implemented on one or more machines external to service center 106.

[053] Network 418 may be any type of network, such as an Ethernet or FDDI network. Additionally, network 418 may also include switches and routers as appropriate without departing from the scope of the invention. Further, additional

firewalls may be present in network 418, for example, to place one or more of servers 406, 408, 410, or voice portal 412 behind additional firewalls.

[054] Each server (406, 408, 410, 414, 416, 420) may be any type of server or computer, such as a Unix or DOS based server or computer. The servers may implement various logical functions, such as those described below. In Fig. 4, a different server is illustrated as being used for each logical function. In other embodiments, the logical functions may be split across multiple servers, multiple servers may be used to implement a single function, all functions may be performed by a single server, etc.

[055] In general, a digital companion server 406 may provide the software and hardware for providing specific services of the service center. Exemplary services include, for example, permitting a customer to add contacts to their address book from a history of calls made or received by the customer, permitting a customer to make calls directly from their address book, scheduling a call to be placed at a specific time, or permitting the customer to look at the name and/or address associated with a phone number. Additionally, these services may include permitting the customer to listen to their voice mail on-line, forwarding their calls based on a scheduler and/or the calling parties number, setting up conference calls on-line, etc. Consistent with principles of the present invention, digital companion server 406 may log and perform operations on outgoing call information associated with a particular subscriber (i.e., user 110). Outgoing call information may be logged/recorded from any of user 110's devices (e.g., 114, 116, 118).

[056] A communication portal server 408 may provide the hardware and software for managing a customer's account and interfacing with customer account information stored by the provider of customer's voice network 104. Network access servers 410 may provide the hardware and software for sending and receiving information to voice network 104 in processing the applications provided by the service center. For example, network access servers 410 may be used for transmitting and/or receiving information from/to an ISCP 302 or an SSP 308 or 310 of voice network 104.

[057] Voice portal 412 includes software and hardware for receiving and processing instructions from a customer via voice. For example, a customer may dial a specific number for voice portal 412. Then the customer using speech may instruct service center 106 to modify the services to which the customer subscribes. Voice portal 412 may include, for example, a voice recognition function 416 and an application function 414. Voice recognition function 416 may receive and interpret dictation, or recognize spoken commands. Application function 414 may take, for example, the output from voice recognition function 416, convert it to a format suitable for service center 106 and forward the information to one or more servers (406, 408, 410) in service center 106.

[058] Fig. 5 illustrates a logical architecture of an exemplary system, consistent with the present invention. As illustrated, the logical architecture may be split into four planes: client side plane 502, application service plane 504, network access plane 506, and voice network plane 508.

[059] Client side plane 502 includes the user terminals 112_A and 112_B that a user may use to send and/or receive information to/from the service center 106. Additionally, client side 502 includes the user's phone(s) 114. As discussed above, user terminals 112 may be any type of device a user may use for communicating with Service Center 106. For example, user terminal 112_A may be a PDA running a program for communicating with Service Center 106, while user terminal 112_B may be a desktop type computer running a web browser for communicating with Service Center 106 via the Internet. Additionally, the user may have one or more phones 114, such as, for example, one or more standard landline telephones and/or wireless phones.

[060] Application service plane 504 includes digital companion server(s) 406, communication portal server(s) 408, and voice portal 412. These entities may communicate between one another using, for example, web services or any other suitable protocols. Web services are a standardized way of integrating Web-based applications using the Extensible Markup Language (XML), Simple Object Access Protocol (SOAP), Web Services Description Language (WSDL) and Universal Description, Discovery and Integration (UDDI) open standards over an Internet protocol (IP) backbone.

[061] As illustrated, a digital companion server 406 may provide the following functions: a client proxy 512, a web server 514, an application server function 516, a calendar server function 518, a notification server function 520, and a database function 522. Each of these functions may be performed in hardware, software, and/or firmware. Further, these functions may each be executed by a separate

server, split across multiple servers, included on the same server functions, or any other manner.

[062] Client proxy function 512 provides a proxy function for the digital companion that may be used for security purposes. This client proxy function 512 may be included in a separate server such that all communications sent from the other digital companion functions/servers to a user terminal 112 via data network 102 go through client proxy 512. Also, if client proxy 512 is included on a separate server, for example, an additional firewall may be provided between the client proxy 512 and the other digital companion servers to provide additional security.

[063] Web server 514 provides functionality for receiving traffic over data network 102 from a customer. For example, web server 514 may be a standard web server that a customer may access using a web browser program, such as Internet Explorer or Netscape Communicator.

[064] Application server function 516 encompasses the general functions performed by digital companion server(s) 406. For example, these functions may include interfacing with the various other digital companion functions to perform specific applications provided by the service center. These services may include, for example, interfacing with other function(s), software, and/or hardware to provide a customer with the capability of managing their calls online. For example, permitting a customer to add contacts to their address book from a history of calls made or received by the customer, permitting a customer to make calls directly from their address book, scheduling a call to be placed at a specific time, or permitting the customer to look at the name and/or address associated with a phone number.

Additionally, these services may include permitting the customer to listen to their voice mail on-line, forwarding their calls based on a scheduler and/or the calling parties number, setting up conference calls on-line, etc. Consistent with principles of the present invention, application server function 516 may facilitate logging and processing outgoing call information associated with a particular subscriber.

Application server function 516 may log/record outgoing call information from any of a particular user 110's devices (e.g., 114, 116, 118). Application server function 516 may store the outgoing call information, display the information to a subscriber (110), and perform various operations on the information.

[065] Additionally, application server function 516 may interface with one or more external devices, such as an external web server, for retrieving or sending information. For example, application server function 516 may interface with a voice network's data center 556 (e.g., verizon.com) to determine the services to which the customer subscribes (e.g., call waiting, call forwarding, voice mail, etc.).

[066] Calendar server function 518 may provide the capability of scheduling events, logging when certain events occurred, triggering the application-functions to perform a function at a particular time, etc.

[067] Notification server function 520 provides the capability to send information from service center 106 to a user terminal 112. For example, notification server function 520 at the direction of application server function 516 may send a notification to user terminal 112 that the user is presently receiving a phone call at user's phone 114.

[068] Database function 522 provides the storage of information useable by the various applications executed by the digital companion servers. These databases may be included in, for example, one or more external storage devices connected to the digital companion servers. Alternatively, the databases may be included in storage devices within the digital companion servers themselves. The storage devices providing database function 522 may be any type of storage device, such as for example, CD-ROMs, DVD's, disk drives, magnetic tape, etc.

[069] As discussed above, communication portal server(s) 408 provide the hardware and software for managing a customer's account and interfacing with customer account information stored by the provider of customer's voice network 104. As illustrated in Fig. 5, a communication portal server 408 may provide the following functions: a web server function 526, an application server function 528, a contacts database function 530, and/or a customer profile function 532. Each of these functions may be performed by a separate server, split across multiple servers, included on the same server functions, or any other manner.

[070] Web server function 526, as with web server function 522 of the digital companion servers, provides functionality for receiving traffic over data network 102 from a customer. For example, the web server may be a standard web server that a customer may access using a web browser, such as Internet Explorer or Netscape Communicator.

[071] Application server function 528 encompasses the general functions performed by communication portal servers 406. For example, these functions may include interfacing with the voice network to retrieve and/or modify customer profile

information, and creating and editing an address book for the user. Additionally, application server function 528 may include the functionality of sending and/or receiving information to/from external servers and/or devices. For example, communication portal servers 408 may be connected to a network, such as, the Internet. Application server function 528 may then provide connectivity over the Internet to external servers 552 that provide web services, such as the Superpages webpage. Application function 528 could then contact these external services 552 to retrieve information, such as an address for a person in the user's address book.

[072] In another example, application server function 528 of communication portal 408 may interface a single sign on (SSO) server 554. SSO 554 may be used to allow users to access all services to which the user subscribes, on the basis of a single authentication that is performed when they initially access the network.

[073] Contacts database 530 includes storage devices for storing an address book for the user. This address book may be any type of address book. For example, the user's address book may include the names, phone numbers, and addresses of people and/or organizations. These storage devices may be internal or external to communication portal servers 406 or some combination in between. In addition, these storage devices may be any type of storage device, such as magnetic storage, memory storage, etc.

[074] Customer profile database 532 includes storage devices for storing customer profile information for the user. These storage devices may be the same or separate storage devices used for the contacts database. The customer profile may include information regarding the user's account for their voice network. For

example, this information may include the user's name, billing address, and other account information. Additionally, the customer profile may include information regarding voice services to which the user subscribes, such as, for example, call waiting, voice mail, etc.

[075] Additionally, application services plane 504 of the architecture may include a voice portal 412. As discussed above, voice portal 412 may include, for example, a voice recognition function 416 and an application server function 414, and be used for receiving and processing instructions from a customer via voice. The voice recognition function may be implemented using hardware and/or software capable of providing voice recognition capabilities. This hardware and/or software may be a commercially available product, such as the Voice Application platform available from Tellme Networks, Incorporated. Application server function 414 of voice portal 412 may include hardware and/or software for exchanging information between digital companion servers 406 and voice recognition function 416. Additionally, application server function 414 may be included on a separate server, included in the hardware and software providing voice recognition function 416, included in digital companion servers 406, etc.

[076] Network Access plane 506 of the architecture includes the functions for providing connectivity between application service plane 502 and voice network 104. For example, this plane may include the recent change engines 316, network access servers 410, and/or back end servers 420.

[077] As discussed above, recent change engines 316 may be used to update switches and ISCP databases included in voice network 104. In one

embodiment, recent change engines 316 may include an AAIS 544, an eRC 546, and/or an MSP 548. Additionally, a proxy 542 may be used between digital companion servers 406 and recent change engines 542 for security purposes.

[078] Network access servers 410 may be included in the service center 106 and may provide the hardware and software for sending and receiving information to voice network 410 in processing the applications provided by the service center. For example, network access servers 410 may include a Caller ID (CID) functionality for retrieving caller ID information from voice network 104, a click to dial (CTD) functionality for instructing an intelligent peripheral (IP) in the voice network to place a call via an SSP, and/or a real time call management (RTCM) functionality for interfacing with an ISCP of the voice network.

[079] Network Access plane 506 may also include one or more back end server(s) 420. These back end server(s) 420 may include hardware and/or software for interfacing service center 106 and voice network 104. Back end server(s) 420 may be connected to service center 106 by a network, by a direct connection, or in any other suitable manner. Further, back end server(s) 420 may connect to one or more devices in voice network 104 by a network, a direct connection, or in any other suitable manner.

[080] Back end server(s) 420 may include, for example, a server providing a voice mail retrieval and notification function. For example, this voice mail retrieval and notification function may include the capability to receive notifications when a user receives a voice mail, physically call a user's voice mail system, enter the

appropriate codes to retrieve the voice mail, retrieve the voice mail, convert the voice mail to a digital file, and send it to digital companion servers 406.

[081] Additionally, back end server(s) 420 may also include, for example, a directory assistance server. This directory assistance server may, for example, interface service center 106 with a Reverse Directory Assistance Gateway (RDA Gateway) of voice network 104. A RDA Gateway is a device for issuing requests to a Data Operations Center (DOC) of voice network 104 for name and/or address information associated with a phone number and receiving the name and/or phone number in response to this request.

[082] In another example, back end server(s) 420 may include a wireless internet gateway that is used for interfacing with a mobile switching center (MSC) of a wireless voice network. As with the above-described back end server(s) 420, this wireless internet gateway may be used for converting requests and information between the formats used by service center 106 and those used by the wireless voice network.

[083] In yet another example, back end server(s) 420 may include a conference blasting server for instructing a conference bridge in the voice network 106 to dial out via an SSP to the participants of a voice conference. Or for example, the back end server(s) may include a server for instructing an IP of the voice network to place a call between two parties by dialing out to each of the parties. Back end server(s) 420 may also include the capability to instruct the bridge or IP device to call an audio digitizing device that can listen to the conference, convert the audio signals to digital format, and forward the digitized signals to a user device via,

for example, an audio streaming server. The audio streaming server may, for example, allow a user to connect to it via, for example, the Internet. Additionally, the audio streaming device may buffer or record the signals to permit the user to pause, rewind, and/or fast-forward thru the conference.

[084] In yet another example, back end server(s) 420 may include a Single Number Short Message Service (SN SMS) server for interfacing the service center 106 with a SMS gateway in voice network 104. This may be used for example to permit the customer to have SMS messages addressed to their home phone number directed to an SMS capable device of the user's choosing.

[085] Voice network plane 508 includes the hardware and software included in voice network 104, as discussed above with reference to Fig. 3. For example, voice network plane 508 may include ISCP SPACE 314, ISCP 302, intelligent peripherals 320, and SSP 308. Additionally, voice network plane 508 may also include the hardware and software included in a wireless carrier's network, such as, for example, the mobile switching center, etc.

[086] For clarity of explanation, system 100 is described herein with reference to the discrete functional elements illustrated in Figs. 1-5. However, it should be understood that the functionality of these elements and modules may overlap and/or may exist in a fewer or greater number of elements and modules. Elements of system 100 may, depending on the implementation, lack certain illustrated components and/or contain, or be coupled to, additional or varying components not shown. Moreover, all or part of the functionality of the elements

illustrated in Figs. 1-5 may co-exist or be distributed among several geographically dispersed locations.

[087] As described above, outgoing call information from any of a user's (e.g., 110) devices may be stored in a call log. As used herein, the term "log" refers to a compilation or listing of data. Forms of the term "log" also refer to the act of compiling, storing, and/or recording information. A "call log" refers herein to a log of information associated with outbound calls originating from one or more devices associated with a particular user. A "call" may include a telephone call placed from one or more communication devices (e.g., landline phone, cell phone, etc.). The term "call" may also encompass other types of communications, such as e-mails, instant messages, facsimiles, etc.

[088] Fig. 6 diagrammatically illustrates an overview of call log processes and features consistent with certain embodiments of the present invention. As depicted in Fig. 6, user 110, as a calling party, may place a call using a calling device (e.g., telephone 118) to a called party 605. Methods and systems consistent with the present invention may obtain information associated with the outgoing call and store the information in a call log 610. In certain embodiments of the present invention, the call log may be implemented via one or more data files and/or structures residing on (or distributed among) one or more storage devices. For example, as illustrated in Fig. 6, call log 610 may be stored via database function 522. Additionally or alternatively, all or part of call log 610 may reside in storage 204 on user terminal 112. In one embodiment, call log 610 may include, for each outbound call, one or more of the following data elements: the dialed number,

information associated with the calling device and/or party, information associated with the called device and/or party, and a time stamp.

[089] In certain embodiments of the present invention, call log 601 may include or reference contact-related information associated with called parties. Consistent with principles of the present invention, such contact-related information may include one or more of a name, home address, business address, home telephone number, business telephone number, cell phone number, instant messenger address, IP address, biometric information (e.g., fingerprints, voice prints, retinal scans, etc.) visual information (e.g., digital images, photographs, etc.), audio information, personal information (e.g., birth date, favorite movies, favorite songs, etc.), public records, credit reports, police records, driving records, banking statements, and contact-related information associated with relatives and/or friends. In certain embodiments, contact-related information may include information associated with, or retrieved via, one or more networks.

[090] User 110 may access call log 610 via, for example, user terminal 112 or telephone 118. In certain embodiments, information in the call log may be organized hierarchically, enabling users to explore detailed information (e.g., details of a specific call), as well as broader views (e.g., overall calling patterns, etc). Additional features associated with the call log are discussed below.

[091] In exemplary embodiments, systems and methods consistent with the present invention may provide to the user filtering and/or processing options for the call log. For example, user 110 may set up an exclusion list in order to preclude entry of certain calls from the call log. The exclusion list may be based on, for

example, any one or combination of the following: outgoing number types (e.g., 800 numbers, 411, etc.), called device types and called party location. Also, the exclusion list may, in one configuration, enable user 110 to exclude calls to certain parties during certain time periods. In one embodiment, user 110 may establish, access, and modify the exclusion list via user terminal 112 and digital companion server 406. Additional details of call log filtering and processing are discussed below.

[092] In certain embodiments of the present invention, outgoing call information originating from a plurality of calling devices associated with a user may be logged and managed. For example, calls originating from a cell phone, landline phone (e.g., 118), and PDA associated with user 110 may be logged. User 110 may set specific filtering settings for logging calls placed from each calling device. In one embodiment, such filtering setting may be specified through the exclusion list. The exclusion list could therefore specify certain types of outgoing calls from each of a user's calling devices that should be excluded from the call log. For example, user 110 could exclude 800 calls from a landline phone and 411 calls from a cell phone. User 110 could also specify, for example, that all calls made from a particular device should be excluded from or included in the call log. User 110 could also specify that calls made to certain parties should be excluded from or included in the call log. Certain filtering settings may allow users to specify that calls made during a certain time period or time of day should be included or excluded in the call log. In addition, certain filtering settings may allow users to log (or exclude from the call log) all calls that fail or that are received by a message service. In certain embodiments, filtering

settings may be dynamically changed for each of a user's devices. Information associated with outgoing calls from each device may be stored, subject to the filtering settings, in the call log. In certain implementations of the present invention, the type of information stored in the call log may vary for each calling device.

[093] Fig. 7 is a flowchart depicting exemplary stages in a call log process consistent with certain embodiments of the present invention. The illustrated call log process may enable a user 110 to establish, set, and/or select filter parameters and/or preferences (i.e., build exclusion list) for the call log (stage 701). In one embodiment of the present invention, user 110 may set specific filter parameters for each of a plurality of devices, as discussed above. Application function 516 and/or user terminal 112 may, in certain implementations, include software, firmware, and/or hardware, for implementing filters, and a Graphical User Interface (GUI) for facilitating user access and interaction. In certain embodiments of the present invention, user 110 may access, input, and modify filtering parameters and/or preferences via user terminal 112.

[094] As mentioned above, systems and methods consistent with the present invention may obtain information associated with outgoing calls. Obtaining information associated with outgoing calls may, in the call log process of Fig. 7, involve configuring one or more calling devices associated with user 110 (stage 710). In one embodiment of the present invention, user 110 may use a landline telephone coupled to voice network 104 in order to place calls to other parties. Accordingly, configuring calling devices may include setting an AIN (Advanced Intelligent Network) Off-Hook Delay ("OHD") trigger on a communication line

associated with the landline telephone. The OHD trigger may be encountered in the call flow when the telephone goes "off hook" and the caller enters a number. That is, the OHD trigger may wait for a telephone number to be entered by a user.

[095] In certain embodiments of the present invention, user 110 may use one or more programmable calling devices to place calls, such as a BREW phone, a J2ME phone, a PDA, and/or a laptop coupled to voice network 104. Such programmable calling devices may be compatible with PSTN and/or VoIP technology and, in certain implementations, be similar in structure to user terminal 112. Accordingly, configuring calling devices (stage 710) may include configuring the programmable calling device to capture and optionally cache outgoing call information, thereby enabling outgoing call information to be obtained. A programmable calling device may, in one embodiment, receive configuration data and/or instructions from server 406, which may cause the device to capture outgoing call information. Such data could, for example, be downloaded from the Internet or automatically transmitted from server 406 to the programmable calling device. A given programmable calling device may also be pre-configured to capture outgoing call information or configured by instructions input to a local storage drive (e.g., CD-ROM drive, floppy drive, etc.). As discussed above, information associated with outbound calls originating from a plurality of calling devices may be stored in the call log. Accordingly, OHD triggers may be set for one or more landline phones and one or more programmable calling devices may be configured to capture outgoing call information, thereby enabling outgoing call information from each calling device to be obtained.

[096] Consistent with principles of the present invention, user 110 may initiate a call to a called party 605 (stage 720). In certain embodiments, user 110 may place a call via one or more landline telephones, wireless telephones, pagers, etc. Additionally or alternatively, user 110 could place a call via one or more digital cell phones, PDAs, J2ME phones, BREW phones, laptops, and/or other programmable calling devices. Telephony services may be provided by voice network 104.

[097] Once user 110 initiates a call, the process of Fig. 7 may obtain information associated with the outbound call (stage 730). In one example, such information may include the dialed number and a time of placing the call. For landline phones, the illustrated process may involve querying AIN SCP (302) in voice network 104. For example, when the handset of a landline telephone goes "off-hook" and user 110 enters the called party number, the OHD trigger may cause a query to be transmitted to the AIN SCP (302). Upon receiving the query, a Service Logic Program (SLP) in ISCP 302 for the subscriber's line may be initiated. The SLP may include one or more hardware, software, and/or firmware components for processing call information and/or routing call information among and between various components and/or systems included in (or coupled to) service center 106. The SLP in ISCP 302 may use GDI TCP/IP to transmit information associated with the outgoing call, including the outbound dialed number, to digital companion server 406 in service center 106 (stage 740).

[098] With programmable calling devices, obtaining information associated with outbound calls (stage 730) may involve capturing call information via the calling

device. Accordingly, the calling device may transmit (stage 740) the captured outgoing call information to digital companion server 406 in service center 106. In certain embodiments of the present invention, the call information may be transmitted from the programmable calling device to service center 106, via network 102 and/or network 104 when the call is made. However, the outbound call information may, additionally or alternatively, be transmitted from the programmable calling device subsequent to the occurrence of the outbound call and/or in response to a request from server 406. Outgoing call information may be transmitted wirelessly to service center 106. In alternative embodiments, outgoing call data may be transmitted over a wired network link and may be transmitted via TCP/IP.

[099] Upon receiving the outgoing call information (stage 740), server 406 may route the information to application function 516 for processing. In certain implementations, application function 516 may determine (stage 750) whether or not the outbound call information should be included in the call log. Application function 516 may use the filtering parameters (stage 701) to determine whether a particular call should be logged. In alternative embodiments, the determination of whether the call should be logged (stage 750) may be performed by ISCP 302 and may occur prior to transmitting the call information to application function 516. If it is determined that the call should be excluded from the call log (e.g., because the dialed number is included in the exclusion list), processing of the call may cease and application 516 may standby for additional outbound calls (stage 720). If, however, it is determined that the outbound call should be logged (stage 750), application function 516 may log the outgoing call information (stage 760). In one embodiment

of the present invention, outgoing call information may be logged in call log 610, which may, as explained above, be stored via database function 522. As mentioned above, information logged in call log 610 may include the dialed number, information associated with the calling and/or called device, and a time stamp indicating when the call was placed.

[0100] Once the outgoing call information is logged (stage 760), the illustrated process may provide the user with access to the call log (stage 770). Providing access may involve visually and/or audibly presenting information in the call log to user 110. In one embodiment of the present invention, the stored information may be displayed to and/or accessed by user 110 via user data network 120 and/or voice network 104. For example, user 110 may access the call log via user terminal 112_A and/or 112_B coupled to data network 120. Additionally or alternatively, user 110 may access the call log via voice network 104 through, for example, voice portal 414. In certain embodiments of the present invention, user 110 may access the call log via one or more calling devices (e.g., a digital cell phone coupled to data network 120 and/or voice network 104).

[0101] The steps illustrated in the flowchart of Fig. 7 are consistent with exemplary implementations of the instant invention. Further, it should be understood that the sequence of events described in Fig. 7 are exemplary and not intended to be limiting. Thus, other method steps may be used, and even with the method depicted in Fig. 7, the particular order of events may vary without departing from the scope of the present invention. For example, filter parameters (e.g., the exclusion list) may be set (stage 701), accessed, and modified at any time. Also, calling

devices may be configured (stage 710) prior to the user setting filters (stage 701). Moreover, certain steps may not be present and additional steps may be implemented in Fig. 7.

[0102] Consistent with principles of the present invention, various operations and analyses may be performed using the call log. In certain embodiments, the call log may be used to add contacts to a contact list (e.g., the above-mentioned address book stored via contacts database 530). Server 406 may, in certain implementations, permit a customer to add contacts to a contact list or address book. User 110 may access the contact list via user terminal 112 and/or voice network 104. The contact list may include names, business and/or home addresses, e-mail addresses, contact numbers, facsimile numbers, and/or other identifying information associated with contacts. In one embodiment, the dialed number may be inserted from the call log into the contact list. In addition, or as an alternative, contact-related information may be obtained and inserted in the contact list when a contact is added. Contact information associated with a particular called party may be obtained using information (e.g., the dialed number) listed in the call log.

[0103] Consistent with embodiments of the present invention contact-related information may be obtained via one or more networks and/or network-based services. In certain embodiments, methods and systems may leverage one or more elements included in or coupled to service center 106 and/or voice network 104 may to retrieve contact information. In one example, back end server 420 may include or be configured as a Reverse Directory Assistance (RDA) server. As such, back end server 420 may interface service center 106 with an RDA Gateway of voice network

104 and may be leveraged by one or more RDA processes to retrieve contact information associated with logged dialed numbers. In certain embodiments of the present invention, the RDA Gateway may accept messages and requests from back end server 420, issue requests/queries for contact information to the DOC of voice network 104, and provide responsive information, including the contact information, back to server 420.

[0104] In certain embodiments, application server function 528 in communication portal server 408 may retrieve contact information associated with logged dialed numbers from sources such as web based services 552.

[0105] Contacts may be added to the contact list automatically and/or on demand. That is, the dialed number and/or contact information associated with a called party may be automatically added to the contact list in response to an outbound call to the called party or may be added to the contact list in response to a command from user 110. For example, back end server 420 may, in conjunction with service center 106 (e.g., servers 406 and/or 408) and voice network 104, automatically retrieve and add contact information associated with a called party to the contact list when application function 516 receives the outbound call information (stage 740). In certain embodiments of the present invention, contacts are added to the contact list once, regardless of the number of calls to that dialed number. Methods and systems consistent with the present invention may determine whether a particular dialed number represents a new contact or one that was previously logged or entered in the contact list by user 110. In one configuration, server 406 (e.g., via application function 516) and/or back end server 420 (e.g., configured as

an RDA server) may perform this determination. If a given dialed number was previously logged or entered, the current outbound call may not be added. If, however, the dialed number in the call log represents a new contact, a new contact entry may be created and contact information associated with the number may be retrieved and added to the contact list, thereby adding the new contact to the contact list. In certain embodiments, user 110 could be notified via user terminal 112 of additions to the contact list.

[0106] Additionally, a user may cause or initiate the addition of a contact to the contact list. In certain embodiments, user 110 may be prompted to specify whether a called party should be placed in the contact list. For example, server 406 may prompt user 110 via user terminal 112 to specify whether or not a called party should be inserted in the contact list at the time of the outbound call to that party. Users could also add previously called parties to the contact list via the call log. In one example, a user may select a dialed number in the call log and, in response, contact information associated with the dialed number may be retrieved (e.g., via RDA processes) and added to the contact list. If the contact is not a new contact, a corresponding message may be displayed to the user, and the user may be prompted to specify whether the contact should be added. In exemplary embodiments of the present invention, the user may specify and alter the manner in which contacts are added to the contact list via, for example, user terminal 112, which may interface with elements in server 406, communication portal server 408, and/or back end server 420. For example, user 110 may set and change preferences via application function 516. In addition, user 110 may dynamically

change the manner in which contacts are added to the contact list at any time. In one implementation of the invention, user 110 may set contact list preferences for the call log when filters are set (stage 701).

[0107] In certain embodiments of the present invention, data analyses may be performed using the call log. For example, the call log may enable a user to view calling patterns and/or frequencies. In one instance, a user could view all outgoing calls (or those to a particular party) occurring in a particular time period (e.g., one month). In certain embodiments, data analyses may be device-specific. That is, data analyses may be performed for each of the user's calling devices. In one example, the user could view calling patterns for and/or the calls originating from each of a plurality of calling devices. Further, one or more different analyses could be performed for each calling device, depending on device type and/or user-specified parameters and instructions.

[0108] In exemplary implementations, server 406 may be configured to perform such analyses (e.g., via application function 516) using the call log. Additionally or alternatively, user terminal 112 may include program code for performing the analyses. The results of the analyses may, in one example, be stored by database function 522 and/or storage 204. The user may access results of the analyses via user data network 120 and/or voice network 104. In one example, a user may access the call log (stage 770) and then initiate certain analyses and view results. Additionally or alternatively, the user may preset analyses to be performed and set parameters associated with such analyses in a manner similar to that described above in connection with stage 701 of Fig. 7. Users

may then automatically receive (via data network 120 and/or voice network 104) analyses reports periodically and/or upon viewing the call log.

[0109] Embodiments consistent with the invention may be implemented in various environments. Further, the processes described herein are not inherently related to any particular apparatus and may be implemented by any suitable combination of components. Moreover, various types of general purpose devices may be used in accordance with the teachings described herein.

[0110] The exemplary systems and methods consistent with present invention described above are illustrative rather than restrictive. Different combinations of hardware, software, and firmware may be suitable for practicing embodiments of the present invention.

[0111] The present invention has been described in relation to particular examples which are intended in all respects to be illustrative rather than restrictive. Different combinations of hardware, software, and firmware may be suitable for practicing embodiments of the present invention.

[0112] Additionally, other embodiments of the invention will be apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed herein. It is intended that the specification and examples be considered as exemplary only. To this end, it is to be understood that inventive aspects lie in less than all features of a single foregoing disclosed embodiment, implementation, or configuration. Thus, the true scope and spirit of the invention depends on the following claims.